

Remarks

The allowance of claims 6-15 is gratefully acknowledged.

Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by van den Berg et al, U.S. Patent 4,754,635. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over van den Berg et al (4,754,635). The Examiner is respectfully requested to reconsider these rejections for the following reasons.

Claim 1 and its dependent claims 3 and 5 recite a method of two-stage stretch forming of a preheated sheet metal blank. An internally heated preform tool and an internally heated finish form tool are used in the two-stage stretch forming method. The preform surface of the preform tool is maintained at preform temperature. The finish form surface of the finish form tool is maintained at a finish form temperature. And the temperatures are different. Claim 1 requires that the finish form temperature is lower than the preform temperature. Thus, the sheet metal blank is first stretched against a preform surface which is maintained at a forming temperature that is higher than the temperature of the finish form surface. The sheet metal experiences successive stretch forming operations at different temperatures, a first relatively high temperature and then a second lower temperature.


The van den Berg et al patent describes a drape drawing process which, strictly speaking, is not a stretch forming process. And in the van den Berg drape drawing process the sheet 6 is not really stretched successively against two different surfaces. Sheet 6 is first pulled (draped) over draw die 1 and then the periphery of the sheet is further urged against the same draw die 1 surface by ejector 12. But a further difference is that the van den Berg et al patent does not require that a finish form temperature be lower than the preform temperature. In the van den Berg disclosure the tools and sheet are all heated at 200°C.

Thus, the van den Berg et al patent reference does not really disclose a two-stage stretch forming method, and it certainly does not disclose a two-stage stretch forming method in which a preform surface is maintained at preform temperature and a finish form surface is maintained at a finish form temperature that is different (lower) than the preform temperature. Clearly, the van den Berg et al '635 patent does not anticipate the methods recited in claims 1 and 3, and it does not suggest the method recited in claim 5. Accordingly, it is respectfully requested that the rejections of claims 1, 3, and 5 be reconsidered.

Dependent claims 2 and 4 are objected to as being dependent upon rejected base claim 1. It is requested that the objections to claims 2 and 4 be removed because of the allowability of claim 1 as argued above.

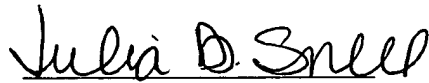
Accordingly, it is urged that claims 1-5 be allowed along with claims 6-15 and the case passed to issue.

Respectfully Submitted,


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